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ABSTRACT

A study to investigate the effect of a visual-verbal method versus a traditional dictionary method to teaching vocabulary development involved 44 students in seventh grade literature classes. A review of the literature indicated a need for quality vocabulary instruction that could offer students more creative, diverse methods to increase their level of understanding in their speaking, listening, and writing vocabularies. Students in the study were divided into two groups: a visual-verbal group illustrated their words by cutting out or drawing pictures to accompany them; a traditional dictionary group looked up their words in the dictionary, listed a synonym or an antonym, and wrote a sentence for each. Both groups then were involved in some form of discussion on their selections. Multiple choice and word passage pretests and posttests were administered and an analysis of the results indicated that there were no significant differences between the two methods. The findings suggest that a visual-verbal method could offer needed indepth understanding of words if it was used in conjunction with other vocabulary instruction methods. (The study's tests and test results are appended.) (AEA)

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AN INVESTIGATION ON THE EFFECT OF A FACILITATING VISUAL-VERBAL METHOD VERSUS THE TRADITIONAL DICTIONARY METHOD ON VOCABULARY DEVELOPMENT

THESIS

Submitted to the Graduate Committee of the
Department of Curriculum and Instruction
Faculty of Education
State University College at Brockport
in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Education

by

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Table of Contents

		Page
List of Tables		iv
Chapter		
I.	Statement of the Problem	1
	Purpose	1
	Need for the Study	1
	Hypotheses	2
	Definition of Terms	3
	Limitations of the Study	4
	Summary	4
II.	Review of the Literature	6
	Vocabulary Development	6
	Vocabulary Studies	8
	Concept Development	11
	Studies on Imagery Paired with Word Tasks	14
	Summary	17
III.	The Research Design	18
	Purpose	18
	Hypotheses	18
	Methodology	19
	Analysis of Data	21
	Summary	22
IV.	Findings and Interpretations	23
	Purpose	23
	Analyzing the Findings and Interpreting the Data	23
	Summary	29
V.	Conclusions and Implications	30
	Description of Study	30
	Conclusions	30
	Implications for Classroom Use	32
	Implications for Research	32
	Summary	33

Table of Contents (Continued)

	Page
References	35
Appendices	
A. Word Passage and Multiple Choice Tests	39
B. Activity and Survey Tests	48
C. Pretest and Posttest Raw Score Data	54

List of Tables

Table		Page
1.	Mean and Standard Deviation of Gain Scores for the Multiple Choice Test	24
2.	Mean and Standard Deviation of Gain Scores for the Word Passage Test	25
3.	Mean and Standard Deviation of Gain Scores of Visual-Verbal Group and Traditional Group on Noun and Descriptor Subtests	26
4.	Summary of Two by Two Method X Subtest Analysis of Variance Comparing Two Methods on Vocabulary Instruction	26

Chapter I

Statement of the Problem

Purpose

The basic goal of this study was to investigate the effect of a facilitating visual-verbal method versus the traditional dictionary method on vocabulary comprehension. This study was initiated to investigate an alternative method to classroom vocabulary development.

Need for the Study

The traditional method of learning new vocabulary words has required students to locate meanings or synonyms from the dictionary and to later recall them on a test. Although teachers may now vary this method through the introduction of other vocabulary activities (crossword puzzles, wordsearch puzzles, synonym-antonym exercises, cloze procedure, et cetera), many still rely on the dictionary as the basis for classroom vocabulary development. Dolch (1953) states that in this method of determining an appropriate synonym "new words are given for old meanings and the student has not increased his stock of meaning of all" (p. 71).

Educators have been concerned with the quality of vocabulary instruction rather than the quantity of memorized word lists. Deighton (1959) reports that in vocabulary development a student

must possess an understanding of word parts and contextual clues. He states that "the prime goal of vocabulary development is to equip the pupil to get the meaning of unfamiliar words as he meets them . . . without recourse to the dictionary" (p. 57).

Research in the area of imagery and paired word lists has shown overall positive results in memory tasks. Rohwer (1970) states that learning should be presented in an optimal learning atmosphere and children "should be taught the use of both verbal and visual kinds of elaborate activities" (p. 402). For the classroom teacher, a visual-verbal method might aid long term comprehension particularly on the more abstract meanings. A visual-verbal approach might also motivate slow learners and further aid them in vocabulary comprehension.

Hypotheses

The null hypotheses investigated in this study were as follows:

1. There are no significant differences between the two methods of vocabulary instruction (visual-verbal versus traditional dictionary) with respect to mean gain scores on (a) multiple choice vocabulary test, (b) word passage test, and (c) the pattern of nouns versus descriptor scores.

2. There are no significant gains from pretest to posttest scores of the visual-verbal method with respect to (a) multiple choice vocabulary test, (b) word passage test, and (c) the pattern of nouns versus descriptor scores.

3. There are no significant gains from pretest to posttest scores on the traditional dictionary method with respect to (a) multiple choice vocabulary test, (b) word passage test, and (c) the pattern of nouns versus descriptor scores.

Definitions of Terms

Terms used in this study are defined as follows:

Traditional Dictionary Method consists of the following activities based on an informal survey given by this investigator to nine English and reading teachers in an inner city junior high: list the definition, list a synonym or an antonym, write a sentence using each word, and conduct a class discussion.

Visual-Verbal Method consists of having students visually displaying their vocabulary words (cutting out pictures or drawing pictures) plus small group discussion of their choices. The dictionary may be consulted but no written exercises will be followed.

Noun is defined as a name of a person, place, or thing.

Descriptor is defined as that which describes or expresses the quality or condition of a word.

Concept as defined by Langer (1967) is "a defined idea or meaning fixed by the term used to designate it . . . a suggested meaning which has been detached from the many specific situations giving rise to it" (p. 449).

Imagery as defined by Webster's New Collegiate Dictionary (1961) is "the process of mentally representing something . . . to represent symbolically" (pp. 413-4).

Visual Aid as defined by Webster's New Collegiate Dictionary (1961) is "any device or means using vision as the chief medium to assist instruction" (p. 954).

Core Words are those words that were taught during the treatment period. Eighty-five percent of the students had to get the vocabulary item correct on the pretest before the word could be eliminated from the study. Those words that were not deleted were designated as the core words.

Limitations of the Study

This study was limited to the following:

1. Only two vocabulary methods were utilized on 44 students at the seventh grade level who had been classified by the school as children with learning problems.

2. Only a sample selection of 15 words was utilized in the word passage test and only 10 nouns and 10 descriptors were utilized in the pattern of nouns versus descriptor scores.

Summary

The literature reviewed showed that there was a need for creative, diversive methods to aid vocabulary development. In the area of comprehension, the research favored the use of visuals paired with word tasks. It was decided to combine these two areas

through the use of a visual-verbal method on classroom vocabulary development. Comparisons between the visual-verbal method and the traditional dictionary method were then determined by a correlated t-test and a two way analysis of variance.

Chapter II

Review of the Literature

The purpose of this study was to investigate the effect of a visual-verbal method versus a traditional dictionary method on classroom vocabulary development. Research related to this study includes vocabulary studies, vocabulary and concept development, and studies on imagery paired with word tasks.

Vocabulary Development

Recent research has incorporated a variety of fields such as psychology and linguistics in its investigation on vocabulary development and its implications for research. Innovative instructional methods have been sought to aid vocabulary development in the classroom. These instructional concerns have dealt with the quality of a child's vocabulary in terms of that child's ability to recognize a word in another context, to evoke and label concepts from a word or a group of words, and to remember that word for further classroom and personal application. In discussing the importance of quality vocabulary instruction, Petty et al. (1967) state that since the child verbally understands many words, it is important for teachers to "improve the child's understanding of commonly used words, rather than yield too strongly to the urge to present a stock of old ones" (p. 9). Classroom vocabulary

instruction usually entails presenting a list of words with each new unit and assumes that, after a variety of exercises, that the student has now mastered a wider range of words from the English language.

The traditional method of learning these new vocabulary words has often required students to locate the meanings and/or synonyms from the dictionary and to later recall them on a test. Although teachers now strive to vary this approach, many still rely on the dictionary as the basis of classroom vocabulary development. Listing an appropriate synonym for each word does not ensure increasing the student's vocabulary. A student has merely replaced one word for another (Dolch, 1953; Langer, 1967).

Students must also be capable of perceiving deeper meanings of words as well as utilizing these multiple meanings appropriately. Deighton (1959) reports that for effective vocabulary development, teachers must make sure that their students have an understanding of word parts and contextual clues. He states that the "prime goal of vocabulary development is to equip the pupil to get meaning of unfamiliar words as he meets them . . . without recourse to the dictionary" (p. 57).

Vocabulary development entails more than presenting new words to students. An effective program utilizes the new words repeatedly in a variety of classroom activities and discussions. Petty et al. (1967), reviewing Gray (1951) on acquired vocabulary, conclude that "presumably a word is in the permanent vocabulary

when it becomes known well enough to be used in both speaking and writing with sufficient cognizance of the major variations in meaning it may have" (p. 10). Deighton (1960) also discusses meaningful vocabulary growth and writes that students often possess a broader vocabulary in reading and listening since "a superficial understanding is sufficient for our purposes . . . new words acquired in a student's reading vocabulary do not immediately transfer to speech and writing because they are imperfectly understood" (p. 82).

Vocabulary Studies

Several studies have been completed within the area of vocabulary development which promote a variety of teaching methods and specific programs. Some of these studies investigate the deductive (whole to the particular) and inductive (particular to the whole) methods on vocabulary development.

In a study reviewed by Petty et al. (1967), Gray and Holmes (1938) compared a direct versus an indirect teaching method on fourth grader's classroom vocabulary development. One group was directly taught by a teacher while the other group learned vocabulary through their class readings and activities. The results indicated that a direct, guided approach to vocabulary expansion produced higher gains than an indirect, unguided approach.

In another study reviewed by Petty et al. (1967), Currie (1963) investigated two teaching methods (inductive versus deductive)

on vocabulary instruction with seven to nine year olds. Currie used three groups with each employing a different teaching technique on word derivation: Method A--meaning of a word part was learned independently by the pupil through classifying activities; Method B--meaning of a word part was directly taught to the pupil; and Method C--regular classroom practice. Activities for Methods A and B were self-directing and self-correcting and students worked in pairs or small groups, 45 minutes each week on vocabulary. All groups made gains, but Methods A and B had significantly higher gains over Method C for word parts. Method A had higher gains than Method B on several of the subtests. This experiment favored the inductive method.

In a third study reviewed by Petty et al. (1967), Catterson (1959) utilized two methods of teaching word analysis (inductive versus deductive) to fifth grade students. The inductive method involved having students place 40 words in context under one of the three corresponding classifications on various cards. The deductive group received their 40 words on cards with a rule on classification at the top of each of the cards. Students in this group had to classify their words according to these rules. A third group followed normal classroom teaching methods for word analysis. Students worked together and lessons were self-corrected. All groups made similar gains in spelling and pronunciation. On total reading achievement and vocabulary, the inductive method had significant gains over the other two methods.

In an unrelated study, Alexander and Barnard (1971) incorporated college students and investigated the effectiveness of two methods of vocabulary instruction: a programmed approach (EDL Word Clues) versus a dictionary approach. In the EDL approach, students worked independently on their appropriate instructional level through the word clues materials. In addition to this, students wrote original compositions or sentences using the words they studied. The dictionary approach followed the format established by Hardwick which had students complete the following: write a new definition for each word using the dictionary, fill in the word study exercise sheet with the appropriate words, and write a sentence or composition utilizing most of their words they studied. The statistical analysis revealed no significant differences between these two approaches on vocabulary growth. Significant gains were made, however, by both groups on vocabulary development. The authors noted that class and teacher interest was high in both groups and that instruction was completed in small groups.

These studies suggest that organization and motivation are two important aids in vocabulary development. Maintaining student interest is an important factor in the student's educational process. Dolch (1953) writes that "audio-visuals aids add much to interest. They give much information not listed in the textbook or in the outline of a course. They expand vocabulary meaning beyond the list any teacher might make" (p. 73).

For the slow learner, Howitt (1964) suggests that for effective vocabulary development the "concrete and the visual should be emphasized" (p. 7). Cushenbery et al. (1972) have listed a variety of creative activities for such children and suggest for vocabulary exercises that they "should be encouraged to make their own picture dictionaries by pasting pictures in a scrapbook to illustrate the definitions of new words which they find" (p. 82).

Petty et al. (1967) summarize the educational impact teachers and methodology may have on student's vocabulary growth by stating that:

> the acquisition of vocabulary is a human process, depending significantly upon the level of intelligence of the individual and his environmental situation, a process that cannot be avoided under normal human condition. Meaning will be attached to the elements of experience . . . with the ability to do this most accurately and to profit most from the experience consigned to the more intelligent. (p. 15)

Concept Development

Along with vocabulary development, the student must also deal with concept development. Carroll (1964) differentiates between words, meanings, and concepts by stating:

> The words in a language can be thought of as a series of physical entities--either spoken or written. Next, there exists a set of 'meanings' which stand in complex relationships to the set of words . . . Finally, there exist 'concepts': the classes of experiences formed in individuals either independently of language processes or in close dependence on language processes. (p. 187)

The development of concepts is a gradual process which is dependent upon the person's set of experiences. Bruner (1973) writes that

the attainment of a concept "seems almost an intrinsically unanalyzable process from an experiential point of view" (pp. 131-132). Olson (1967) reports that conceptual strategies differ according to the age of the child. He writes that:

> most studies of problem solving in children characterize the behavior of the preschool child as receptive or respondent to stimuli, while the behavior of the older child appears to be determined far more by the plans or hypotheses the child generates . . . one of the important aspects of such development is the shift to symbolic or linguistically mediated representation. (p. 135)

Piaget has established the ages of approximately four through seven as the period when a child is capable of complex mental functioning. The child begins to manipulate internal representations and now he/she can expand from the specific to the more general in his/her thinking and learning processes. This is the beginning of the concrete operational stage for thg growing child (Bee, 1975).

Fowler (1965) comments on the importance of guiding the young child's cognitive developmental process within the educational setting. Dealing with concept development, Fowler highly estimates the child's earlier experiences and states that "the first discriminations and generalizations acquired become foundation concepts upon which subsequent discriminations and generalizations must be erected" (p. 122). Fowler urges educators to establish a classroom environment that will aid in this stimulation and to select topics which correspond to the child's interest and levels of difficulty. Langer (1967) further adds that when concepts are

"developed through direct experiences and the labels for these experiences and their relationships are given, the difficulty is lessened" (p. 451).

Each student has his/her own set of personal experiences that teachers must fully develop in both vocabulary and concept development. Carroll (1964) explains this further by stating that "concepts are, after all, essentially idiosyncratic in the sense that they reside in particular individuals with particular histories of experiences that lead them to classify those experiences in particular ways" (pp. 183-84). Langer (1967) explores the relationship between concept and vocabulary development in the classroom and states that the former is "a gradual process in which concepts develop from simple to complex mental constructs which are evoked and labeled by signs which are most often words and which serve as guides for behavior" (p. 455).

Educators cannot separate these developmental processes from the child; they are an integral part of each child. Educators should develop their curriculum to aid the child's cognitive progression to the more higher levels of thought. The goal of education should then be to develop highly intelligent children; to motivate the child to actively think rather than merely acquire new information (Furth, 1970). Sutton (1963) writes that teachers can assist a student's concept development by fulfilling the following:

> (1) adding to the student's knowledge, giving him more material for thought, (2) asking questions which stimulate thought, (3) aiding in goal identification, (4) encouraging

> free expression of ideas, (5) providing exercises in thinking rather than memory and identification, and (6) developing an awareness of relationships. (p. 540)

Vocabulary and concept development entail creating a classroom environment that will facilitate both by means of a variety of methods such as reading, listening, speaking, writing, visuals, et cetera (Kahle, 1972; Fowler, 1965; Pflaum, 1973).

Studies on Imagery Paired with Word Tasks

Of the various methods utilized in vocabulary development, research has been conducted in the area of imagery: visuals paired with word tasks. Rosinski et al. (1977) state that it is a natural process to include visuals in children's learning tasks and write that "the advantage of pictures over words lies in the nature of the relationship between early childhood experience and pictures, words, and their referents" (p. 282). Bruner (1967) explores the factors which influence cognitive growth in children and, referring to a study by Kuhlman (1960) writes that "one would expect, then, that certain intellectual tasks, even though associated with language acquisition, would be aided by imagery and certain others hindered . . . the task of learning a vocabulary of concrete nouns would be aided by good imagery" (p. 26).

Several studies have been completed within the area of visuals to motivate children, to increase comprehension levels, and to lessen learning frustrations.

Deno (1968) in his study of visuals paired with foreign words found that visuals aided learning as long as both picture and word were conceptually related.

In a study on factors which aid retention, Corsini (1969) reported that "when internal representations are required, providing preschool children with nonverbal cues aids retention of a verbal instruction" (p. 435). Daehler (1976) similarly found in his study on retention that "when tasks require processing of a well-defined set of stimuli and/or spatial cues, even very young children remember and perform effectively under either verbal or visual modes of presenting information" (p. 474). Investigating children's visual learning tasks, Rohwer (1970) confirms that "pictures are easier to remember than words but only when the verbal labels for the pictures are stored with them . . . the capacity of pictures to evoke imagery increases with the age of the child" (pp. 394-95). In the same study, Rohwer writes that learning should be presented in an optimal learning atmosphere where children "should be taught the use of both verbal and visual kinds of elaborate activities" (p. 402). The research suggests that visuals aid instruction and retention particularly for older children in that meaning is evoked by integrating the images whereas young children might neglect to fully integrate the visual materials (Reese, 1970; Paivio, 1970).

On paired-associated learning tasks (words and visuals), Paivio and Dilley (1968) noted that "pictorial stimuli facilitated learning for both children and adults, especially in combination with

words as responses" (p. 238). In an earlier study, Paivio and Yarmey (1966) presented pictures and their noun labels on the stimulus and response sides of paired-associate lists and concluded that "learning was better with pictures than with nouns as stimuli . . . no main effect was obtained on the response side" (p. 235). Paivio (1970) further postulates that images aid in the recall of concrete versus abstract situations "when the stimulus member is concrete and high in related imagery, subjects not only learn the pair better, but also report using images more often than when the stimulus is abstract" (p. 389).

Cole et al. (1971) investigated free recall learning in children ranging in ages one to nine and found that visual aids rather than verbalization were among the positive variables on free recall tests.

On another study, Samuels (1967) reported on the effect of pictures on the attention process in reading and found that poorer readers performed better without pictures. There were no significant differences (pictures versus no pictures) among better readers.

The debate over visuals versus other teaching methods should not be an "either-or" decision. Deighton (1960) suggests that:

> Ultimately, the responsibility for vocabulary growth like any other intellectual growth rests with the student. We cannot learn words for him . . . What we can do is to create a climate favorable to vocabulary growth, and we shall find that this climate must persist from day to day. We must make words seem important and interesting all the time. (p. 85)

Gray et al. (1938) further speculate on the educational climate that will foster vocabulary development and conclude that:

> it is obvious that four factors determine to a large extent the growth of a child's vocabulary, namely, his capacity to learn, the character of his environment, the nature and development of his interests, and the kind of instruction received. (p. 22)

Summary

The literature reviewed in this chapter indicates that, to facilitate cognitive and vocabulary development, educators must create a learning environment that helps to motivate as well as to foster intellectual growth. This approach may be direct or indirect as long as student interest is maintained and some guidance is available in the student's learning process. For the older child, a visual-verbal approach to vocabulary might not only aid in comprehension, but might also generate interest with words, their origins, and their multiple meanings. Such an approach could also be utilized in conjunction with other vocabulary methods to vary the more traditional teaching techniques on classroom vocabulary instruction.

Chapter III

The Research Design

Purpose

The purpose of this study was to investigate the effect of a facilitating visual-verbal method on the overall development of vocabulary comprehension versus the traditional dictionary method.

Hypotheses

The null hypotheses investigated in this study were as follows:

1. There are no significant differences between the two methods of vocabulary instruction (visual-verbal versus traditional dictionary) with respect to mean gain scores on (a) multiple choice vocabulary test, (b) word passage test, and (c) the pattern of nouns versus descriptor scores.

2. There are no significant gains from pretest to posttest scores on the visual-verbal method with respect to (a) multiple choice vocabulary test, (b) word passage test, and (c) the pattern of nouns versus descriptor scores.

3. There are no significant gains from pretest to posttest scores on the traditional dictionary method with respect to (a) multiple choice vocabulary test, (b) word passage test, and (c) the pattern of nouns versus descriptor scores.

Methodology

Subjects

The subjects involved in this study were seventh graders (11-13 years old) attending an inner city school in a predominantly low socioeconomic area. A total of fifty students participated in this study; six were deleted due to excessive absences. All 44 children were pretested orally using a multiple choice test and a word passage test.

Instruments and Procedures

Forty core words were selected from a sample of 68 words taken from a Greek Mythology Unit. These core words were then incorporated into a multiple choice test. Fifteen of the most difficult words were then incorporated into a word passage test. Both tests were reviewed by a panel of inner city junior high teachers for the following concerns: syntax, consistency in wording, and weighted meanings. Each test was presented orally to eliminate any difficulty a student might have had in silent reading tasks. Any student who scored above 85 percent was statistically eliminated from the study. On the multiple choice test, a fifth choice of "I don't know" was added to eliminate guessing and to project a true representation of the students' word knowledge. On the word passage test, questions were asked on vocabulary meaning as determined by the way each word was presented in context. The topic of these three word passages was not related to Greek Mythology. Students

had a written copy of both tests during the oral pretesting and posttesting situations. (See Appendix A)

The 44 students were previously divided into two groups of low reading ability according to their scores on the Spring 1977 Metropolitan Intermediate Test-Form F. Each group's mean reading score was at the fourth grade level. The traditional dictionary method and the visual-verbal method were randomly assigned to these groups.

This author instructed both groups for a period of one month. The subject of this instruction was on Greek Mythology. The visual-verbal group received their vocabulary words (three nouns; two descriptors or vice versa) twice a week and were instructed to visually display the meaning of each word (from magazine pictures or from personal drawings). This group had prior practice sessions to eliminate any advantage the traditional dictionary group may have had using the dictionary. Students in the visual-verbal group were able to use the dictionary to look up word meanings but they were not able to use the dictionary to write definitions, to list synonyms, et cetera. During each work period (approximately 35-40 minutes), this investigator initiated small group discussion on each student's choices with the following questions:

1. Why did you choose this picture or drawing?
2. How do the picture and word relate to each other?
3. What other meanings does this word have?

The class and the teacher reviewed the various meanings for each word and arrived at a consensus of one meaning for each word as it appeared in the context of Greek Mythology.

The traditional dictionary group received their vocabulary words (three nouns; two descriptors or vice versa) twice a week and were instructed to complete the following tasks with a dictionary:

1. Write the definition.
2. List a synonym or an antonym.
3. Write a sentence of their own for each word.
4. Class discussion of multiple meanings.

During the class discussion, one appropriate definition was selected as it appeared in the Greek Mythology Unit (papers were corrected and returned to the students the next day). This traditional dictionary approach was based on an informal survey taken with nine junior high English and reading teachers to determine how they taught vocabulary in their literature units. The majority agreed on the above method.

At the end of the four week treatment period, both groups were given two oral posttests (multiple choice and word passage) and comparisons between groups were then determined.

Analysis of Data

Test scores of those who learned vocabulary by the visual-verbal method were compared to the test scores of students who learned their words by the traditional dictionary method. A

correlated t-test was used to compare students' individual gains from the pretest to the posttest on the multiple choice and word passage test. A two way analysis of variance was used to compare the two groups with respect to noun and descriptor subtests.

Summary

This study was designed to examine the effect of a facilitating visual-verbal method versus the traditional dictionary method on classroom vocabulary development. Two pretests and two posttests were used as the evaluating devices. Mean gain scores were examined for both tests along with the mean gain scores of noun and descriptor patterns. A correlated t-test was used to compare individual pretest and posttest scores.

Chapter IV

Findings and Interpretations

Purpose

The purpose of this study was to determine the effect of a visual-verbal method versus a traditional dictionary method on two groups of seventh grade students' vocabulary development. Comparisons were made on mean gain scores from pretest to posttest on a multiple choice vocabulary test and on a word passage test. Further comparisons were determined on noun and descriptor gain scores.

Analyzing the Findings and Interpreting the Data

The null hypotheses investigated in this study were as follows:

1. There are no significant differences between the two methods of vocabulary instruction (visual-verbal versus traditional dictionary) with respect to gains on (a) multiple choice vocabulary test, (b) word passage test, and (c) the pattern of noun versus descriptor scores.

2. There are no significant gains from pretest to posttest on the visual-verbal group with respect to (a) multiple choice vocabulary test, (b) word passage test, and (c) the pattern of nouns versus descriptor scores.

3. There are no significant gains from pretest to posttest on the traditional dictionary group with respect to (a) multiple choice vocabulary test, (b) word passage test, and (c) the pattern of noun versus descriptor scores.

A correlated t-test was used to determine mean gain scores and to determine comparisons between pretest and posttest scores for sections (a) and (b) for all three hypotheses and for section (c) for hypotheses two and three. A two by two analysis of variance was used to determine the pattern of noun versus descriptor scores for section (c) for hypothesis one.

The first null hypothesis states that there are no significant differences between the two methods of vocabulary instruction (visual-verbal versus traditional) with respect to three separate sets of mean gain scores. The first set of results is summarized in Table 1.

Table 1

Mean and Standard Deviation of Gain Scores for the Multiple Choice Test

Statistic	Visual-Verbal	Traditional Dictionary
$\bar{X}$	13.18	14.59
σ	8.43	8.63

$p > .05$

The data in Table 1 indicates that there were no statistically significant differences in the mean gain scores for the two groups with respect to the multiple choice choice vocabulary test, t (42) = 0.55, $p > .05$. Therefore, the findings fail to reject section (a) of hypothesis one. Although the traditional dictionary group evidenced slightly more growth (1.41) than the visual-verbal group, this difference was statistically non-significant.

The second section of the first hypothesis is summarized in Table 2.

Table 2

Mean and Standard Deviation of Gain Scores for the Word Passage Test

Statistic	Visual-Verbal	Traditional Dictionary
$\bar{X}$	2.8	3.4
σ	3.0	2.5

$p > .05$

The above results indicate that there were no statistically significant differences of the mean gain scores with respect to the word passage test, t (42) = 0.83, $p > .05$. Therefore, the findings reported in Table 2 fail to reject hypothesis one (b). Although the traditional dictionary group evidenced more growth (.6), it was statistically non-significant.

Section (c) of the first hypothesis is summarized in Tables 3 and 4.

Table 3

Mean and Standard Deviation of Gain Scores of Visual-Verbal Group and Traditional Group on Noun and Descriptor Subtests

Subtest	Statistic	Visual-Verbal	Traditional Dictionary
Noun	$\bar{X}$	3.0	3.2
	σ	2.2	1.9
Descriptor	$\bar{X}$	1.4	2.5
	σ	2.5	2.1

$P < .001$

Table 4

Summary of Two by Two Method X Subtest Analysis of Variance Comparing Two Methods on Vocabulary Instruction

Source	df	SS	MS	F
Method	1	8.90	8.90	1.87
Subtests	1	30.72	30.72	6.45*
M X S	1	4.57	4.57	0.96
Error	84	399.81	4.76	
Total	87	4.444		

*$P < .025$

A two-way analysis of variance was used to compare the two groups with respect to the noun and descriptor subtests. The main interest in this analysis is the subtest X method interaction. The results of the analysis of variance are shown in Table 4. The main effect for method was not significant, F (1, 84) = 1.87, $p > .05$ confirming that the two methods did not differ at a statistically significant level.

The main effect for subtests was statistically significant, F (1, 84) = 6.45, $p < .025$, indicating that the descriptor subtest was more difficult than the noun subtest. The main interest, the test of the interaction effect, indicates no statistically significant differences between the pattern of noun and descriptor scores. For the two methods, F (1, 84) = 0.96, $p > .05$.

Both groups did better on the noun subtest. The 1.6 noun and descriptor difference for the visual-verbal group did not significantly differ from the 1.7 difference of the traditional dictionary group. Therefore, these findings fail to reject section (c) of the first hypothesis.

The second hypothesis states that there are no significant gains from pretest to posttest on the visual-verbal group with respect to three separate tests. For the visual-verbal group, the mean gain score of 13.18 with respect to the multiple choice vocabulary test (see Table 1) was highly significant, t (21) = 7.34, $p < .001$. The correlation between pretest and posttest scores

was highly significant, r (20) = .70, $p < .001$. Therefore, the findings reject section (a) of hypothesis two.

For section (b) of the second hypothesis, the mean gain of 2.8 for the visual-verbal group with respect to the word passage test (see Table 2) was highly statistically significant, t (21) = 4.4 $p < .001$. Therefore, these findings reject section (b) of hypothesis two.

For section (c) of the second hypothesis, the mean gain score of 3.0 for the visual-verbal group with respect to the pattern of nouns (see Table 3) was statistically significant, t (21) = 6.4, $p < .001$. The mean gain score of 1.4 for the visual-verbal group with respect to the pattern of descriptors (see Table 3) was statistically significant, t (21) = 2.6, $p < .001$. Therefore, these findings reject section (c) of hypothesis two.

Hypothesis three states that there are no significant gains, pretest to posttest, on the traditional dictionary group with respect to three separate tests. For this group, the mean gain score of 14.59 with respect to the multiple choice vocabulary test (see Table 1) was highly significant, t (21) = 8.0, $p < .001$. These findings reject section (a) of hypothesis three.

For section (b), the mean gain score of 3.5 with respect to the word passage test (see Table 2) was statistically significant, t (21) = 6.5, $p < .001$. Therefore, these findings reject section (b) of hypothesis three.

For section (c), the mean gain score of 3.2 with respect to the pattern of nouns (see Table 3) was statistically significant, t (21) = 7.7, $p < .001$. For the descriptors, the mean gain score of 2.5 (see Table 3) was statistically significant, t (21) = 5.5, $p < .001$. Therefore, these findings reject section (c) of hypothesis three.

Summary

The findings in this chapter suggest that vocabulary development utilizing either method (visual-verbal or traditional dictionary) was successful. There were no significant differences between the two methods. Each method was statistically significant with respect to mean gain scores on the multiple choice vocabulary test and on the word passage test. Although the traditional dictionary group evidenced slightly more growth on these two tests, this growth was statistically non-significant. There were no statistically significant differences between methods with respect to the pattern of noun and descriptor scores. Each group had significant gains for both subtests. Both groups did better, however, on the noun subtest.

Chapter V

Conclusions and Implications

Description of Study

This study investigated the effect of a visual-verbal method versus a traditional dictionary method on classroom vocabulary development. A multiple choice vocabulary test and a word passage pretest and posttest were administered to measure gain scores for both groups. Further analysis was also ascertained on noun and descriptor gain scores.

Conclusions

The results of the data indicate that there were no significant differences between the two methods of vocabulary instruction on either the word passage test or on the multiple choice vocabulary test. There were no significant differences between the two methods of instruction on noun and descriptor scores.

Each method did, however, exhibit significant gains on all three tests. This suggests that both methods were equally effective on classroom vocabulary development. For the visual-verbal group, these gains could possibly be attributed to the high level of student and teacher interest, to the introduction

of a new method on vocabulary enrichment, and to the effect of working within small groups. An informal survey taken after the study indicates that the visual-verbal method of vocabulary instruction proved to be interesting (easier to remember, fun to draw, enjoyed cutting out pictures, et cetera), and indicates that some children felt that they learned or remembered the meanings of the words better. A few children, however, indicated that they enjoyed the dictionary method better than the visual method as they would rather write the definition out and study it later and because they felt that the dictionary method would be faster and easier.

For the traditional dictionary group, these gains could possibly be attributed to the high level of student and teacher interest, to the fact that their lessons were organized and assembled on colored paper, to the effect of working within small groups, and to the fact that they received immediate positive feedback on their papers. Greene (1945) reports that "in dictionary work, best achievement in pupil attitude, confidence, and skill was obtained through strongly motivated exercises, and material not pitched too high-exercises where students could obtain successful results" (p. 343). It is also interesting to report that on the informal survey, some of the visual-verbal students indicated that an alternative approach to vocabulary development should be utilizing the dictionary.

Implications for Classroom Use

A visual-verbal approach to vocabulary development can be a creative, diverse change from the more traditional methods. Such a method could be effectively implemented in conjunction with other vocabulary exercises to aid vocabulary comprehension. Student interest and motivation are two critical factors affecting academic success. A visual-verbal approach to classroom vocabulary enrichment facilitates both of these concerns. Each student can experience some degree of success and self satisfaction with this approach as each develops his/her own vocabulary scrapbook through either personal drawings or from individual selections of pictures from magazines. Students assist one another and exchange their feelings and views on selected pictures or drawings. The teacher is also present to offer further assistance and direction. Such an approach to vocabulary development further aids comprehension in that the picture serves to evoke the word's meaning, particularly if the word is a noun.

Implications for Research

Implications for further research can be investigated in the following areas:

This study might be extended for a longer period of time to effectively determine the impact of a visual-verbal approach versus a traditional dictionary method on classroom vocabulary development.

A larger population could be utilized that includes a variety of reading levels to determine the effectiveness of these two vocabulary methods on an extensive range of students and abilities.

Summary

The basic goal of this study was to determine the effectiveness of a visual-verbal method versus a traditional dictionary method on vocabulary development. This study was initiated to seek alternative methods to the more traditional ways of vocabulary enrichment. The analysis of the data revealed that there was no significant difference between the two methods of instruction. Both groups did, however, exhibit significant gains with respect to the multiple choice vocabulary test and the word passage test. Both methods also yielded a significant growth for descriptor scores and especially for noun scores.

The research indicates a need for quality vocabulary instruction that offers a child diversity and creativity. A visual-verbal approach to vocabulary instruction can offer teachers such a change from the more traditional methods of vocabulary instruction. By utilizing a visual-verbal method, the teacher allows the child to independently discover word meanings through the medium of personal pictures and drawings. Such visuals can aid vocabulary meaning and comprehension by serving to evoke

impressions until meaning is assimilated. The child can be expected to retain a mental picture of each word from his/her personal collection of pictures or drawings.

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Appendix A

Word Passage and Multiple Choice Tests

DO NOT WRITE ON

Pre/Posttest: Word Passages
Greek Mythology Unit

Directions: Read along silently while I read the three passages aloud to you. Then answer the vocabulary exercises on your answer sheet. Do not discuss your choices with your neighbor.

I. The evening sun slipped beneath the pink clouds casting a scarlet glow over the valley. On the crested cliffs overlooking the valley, a bald eagle has built its dwelling. From his nest, he can view the animals far below. Two deer leave the forest to drink at the edge of the pond. Mosquitos swarm high above the water, while a steed quickly gallops in the distance in search of its herd. The eagle continues to watch the activity below when he spots a family of rabbits enjoying the red clover in an open field. Suddenly, the eagle swoops down on the unsuspecting rabbits. A screech fills the air as he plunges his talons into the smallest rabbit. The other rabbits quickly scurry into a groundhog's burrow until the eagle has flown out of sight.

1. In this story, scarlet means:

   a. bright red b. sunny yellow c. flying bird
   d. antique car e. don't know

2. In this story, crested means:

   a. having fear b. having height c. having color
   d. having friends e. don't know

3. In this story, dwelling means:

   a. field b. home c. machine d. station e. don't know

4. In this story, steed means:

   a. goat b. donkey c. bull d. horse e. don't know

5. In this story, talons means:

   a. drumsticks b. hinges c. fangs d. claws
   e. don't know

6. In this story, burrow means:

   a. small hill b. bread dough c. floor covering
   d. animal tunnel e. don't know

II. The five explorers were tired and hungry after a long day of searching for Greek treasures. One woman stopped working to take a drink of water. She sat down on a rock and stared off into the distance. Suddenly, her eye caught a reflection of a shiny object in the sand. She walked over and began to dig in the sand until she felt a solid object beneath her fingers. She pulled a lyre from the sand and plucked at its strings. Music filled the air. Excitedly, she called the other explorers to start digging for other valuable relics that might also be in the area. Over the next two days, dishes, tools, and bones were discovered and sent back to a museum in the United States. One of the explorers secretly hid a studded sword in his traveling bag. He hoped that the jewels on the handle might be valuable. Another woman held up the top of what looked like a pitch fork. Everyone came over to view the old, golden trident. Since it was pronged, they were careful to wrap it several times before they shipped it back to the museum.

7. In this story, lyre means:

   a. Spanish guitar b. small Greek harp c. French horn
   d. wooden recorder e. don't know

8. In this story, relics means:

   a. objects from the past b. food for picnic
   c. tools of carpenter d. tropical fruits e. don't know

9. In this story, studded means:

   a. sharpened b. stolen c. sunken d. decorated
   e. don't know

10. In this story, trident means:

   a. three-pronged spear b. typewriter c. family gathering
   d. television program e. don't know

11. In this story, pronged means:

   a. having pointed ends b. having rough edges
   d. having a sour taste d. having a baby e. don't know

III. The silly old woman stood before the mirror smiling at herself. She was toothless and had little hair, yet she believed that she was the most beautiful woman in the world. Because of her vanity, no one cared to visit her. One day, the old woman heard the front doorbell ring. She peeked out her front window and saw a little girl standing there. She opened the door and asked the little girl what she wanted. The little girl said that she was selling candy bars for her school. The old woman smiled and decided to try to beguile the girl into staying with her. She asked the girl to enter while she got her purse. The little girl stepped inside the strange house. As soon as she entered, the old woman laughed and locked the door. She then cast a spell on the door so that it wouldn't open for the little girl. The little girl realized that she was trapped and began to cry. Since the old woman couldn't stand the sight of tears, she decided to let the melancholy girl go free. The girl dried her eyes and promised the old woman that she would visit her once a week from then on after. The old woman smiled and hugged the little girl and opened the locked door.

12. In this story, vanity means:

a. rudeness b. luck c. cleanliness d. pride
e. don't know

13. In this story, beguile means:

a. to leave b. to trick c. to cry d. to catch
e. don't know

14. In this story, spell means:

a. a song b. a charm c. a sickness d. a story
e. don't know

15. In this story, melancholy means

a. happy b. confused c. sad d. desperate
e. don't know

Name _____

Class _____

Male or Female _____

Greek Mythology Pre/Posttest

The words will be read twice to you. Listen carefully and then place the letter of the correct choice on the line. If you do not know the answer, place the letter of 'Don't Know" on the line. Do not guess.

1. _____ a. to leave b. to trick c. to cry d. to catch e. don't know

2. _____ a. imaginary story b. church prayer c. factual account d. loud argument e. don't know

3. _____ a. photograph of a person b. painting in a museum c. image of a person in stone, clay d. profile drawing e. don't know

4. _____ a. music hall b. building of worship c. gymnasium d. auditorium e. don't know

5. _____ a. dark cave b. smooth rock c. flat table d. rough sandpaper e. don't know

6. _____ a. carriage b. chair c. motorcycle d. swing e. don't know

7. _____ a. destroy b. lift c. sleep d. make e. don't know

8. _____ a. falling b. twisting c. bending d. stepping e. don't know

9. _____ a. god b. bird c. officer d. goddess e. don't know

10. _____ a. angry b. empty c. sleepy d. gloomy e. don't know

11. _____	a. twirling around	b. laying down		
	c. standing straight	d. bending over	e. don't know	
12. _____	a. be similar to	b. be unlike to		
	c. be sure of	d. be next to	e. don't know	
13. _____	a. in the present	b. in the country		
	c. in the city	d. in the past	e. don't know	
14. _____	a. valuable	b. worthless		
	c. common	d. religious	e. don't know	
15. _____	a. slow	b. rough		
	c. curving	d. fast	e. don't know	
16. _____	a. money	b. mood		
	c. height	d. wealth	e. don't know	
17. _____	a. startling	b. uninviting		
	c. saddening	d. charming	e. don't know	
18. _____	a. Spanish guitar	b. small Greek harp		
	c. French horn	d. wooden recorder	e. don't know	
19. _____	a. happy	b. confused		
	c. sad	d. desperate	e. don't know	
20. _____	a. shining	b. laughing		
	c. jumping	d. driving	e. don't know	
21. _____	a. old woman	b. farm worker		
	c. housekeeper	d. young girl	e. don't know	
22. _____	a. a song	b. a charm		
	c. a sickness	d. a story	e. don't know	
23. _____	a. loud	b. blind		
	c. silent	d. hidden	e. don't know	
24. _____	a. motion picture	b. dance step		
	c. flowering plant	d. dreamy sleep	e. don't know	
25. _____	a. kind words	b. good luck		
	c. evil wish	d. fist fight	e. don't know	
26. _____	a. brown metal	b. wooden club		
	c. rusty nail	d. painted house	e. don't know	

27. _____	a. fur	b. bead	
	c. ribbon	d. feather	e. don't know
28. _____	a. stupidity	b. trickery	
	c. honesty	d. intelligence	e. don't know
29. _____	a. stare	b. sleep	
	c. mutter	d. stumble	e. don't know
30. _____	a. large snake	b. crawling insect	
	c. state map	d. racing horse	e. don't know
31. _____	a. game	b. meeting	
	c. chore	d. paper	e. don't know
32. _____	a. closets	b. stables	
	c. lockers	d. chests	e. don't know
33. _____	a. wool of an animal	b. trim on a building	
	c. chrome on a car	d. feather of a bird	e. don't know
34. _____	a. goat	b. donkey	
	c. bull	d. horse	e. don't know
35. _____	a. to go forward	b. to draw a picture	
	c. to go back upon	d. to make bigger	e. don't know
36. _____	a. meeting	b. riot	
	c. party	d. reunion	e. don't know
37. _____	a. valley	b. hillside	
	c. dessert	d. gadget	e. don't know
38. _____	a. small hill	b. bread dough	
	c. floor covering	d. animal tunnel	e. don't know
39. _____	a. kind	b. tiny	
	c. savage	d. painful	e. don't know
40. _____	a. fearful	b. bold	
	c. aged	d. tall	e. don't know
41. _____	a. drumsticks	b. hinges	
	c. fangs	d. claws	e. don't know
42. _____	a. field	b. house	
	c. machine	d. station	e. don't know

43. ____	a. holy	b. evil		
	c. deep	d. clear		e. don't know
44. ____	a. search	b. avoid		
	c. burn	d. boil		e. don't know
45. ____	a. skeleton of an animal	b. holes in clothing		
	c. cracks in a road	d. remains of a city		e. don't know
46. ____	a. objects from past	b. food for picnic		
	c. tools of carpenter	d. tropical fruits		e. don't know
47. ____	a. disorganized	b. cultured		
	c. ignorant	d. scared		e. don't know
48. ____	a. simply	b. slowly		
	c. joyously	d. quickly		e. don't know
49. ____	a. just king	b. young teacher		
	c. crying baby	d. cruel ruler		e. don't know
50. ____	a. fly upward	b. tumble down		
	c. standstill	d. roll over		e. don't know
51. ____	a. crisp and fresh	b. soft and fluffy		
	c. hard and flat	d. old and wrinkled		e. don't know
52. ____	a. mountain top	b. food supply		
	c. small hill	d. power drill		e. don't know
53. ____	a. clever	b. dull		
	c. shy	d. serious		e. don't know
54. ____	a. to stammer	b. to weep		
	c. to echo	d. to flap		e. don't know
55. ____	a. person who makes shoes	b. person who bakes bread		
	c. person who makes cloth	d. person who makes jewelry		e. don't know
56. ____	a. pleased	b. annoyed		
	c. killed	d. shattered		e. don't know
57. ____	a. bright red	b. sunny yellow		
	c. flying bird	d. antique car		e. don't know

58. _____ a. rudeness b. luck
c. cleanliness d. pride e. don't know

59. _____ a. three-pronged spear b. typewriter
c. family gathering d. television program e. don't know

60. _____ a. dishonest b. beautiful
c. outstanding d. manly e. don't know

61. _____ a. lazy b. hardworking
c. messy d. poor e. don't know

62. _____ a. sharpened b. stolen
c. sunken d. decorated e. don't know

63. _____ a. having pointed ends b. having rough edges
c. having a sour taste d. having a baby e. don't know

64. _____ a. prison cell b. baseball bat
c. slender rod d. heavy weapon e. don't know

65. _____ a. turning blue b. dealing with ships
c. containing poison d. being unripe e. don't know

66. _____ a. quick view b. short distance
c. thin man d. heartbeat e. don't know

67. _____ a. swimming b. shaping
c. digging d. wondering e. don't know

68. _____ a. having fear b. having height
c. having color d. having friends e. don't know

Word List (*descriptors;**nouns)

1. beguile
2. myth
3. statue
4. temple
5. marble
6. chariot
7. create
8. writhing*
9. nymph**
10. irate*
11. upright
12. resemble
13. ancient
14. precious
15. swift
16. temperament
17. enchanting
18. lyre**
19. melancholy*
20. gleaming
21. maiden**
22. spell
23. mute*
24. trance
25. curse
26. bronze
27. plume**
28. sly
29. gaze
30. serpent**
31. task
32. stalls
33. fleece**
34. steed**
35. retrace
36. conference
37. slope
38. burrow
39. fierce*
40. timid*
41. talons**
42. dwelling
43. divine*
44. scorch
45. ruins**
46. relics
47. civilized
48. gleefully*
49. tyrant
50. soar
51. downy
52. mound
53. ingenious
54. flutter
55. weaver
56. vexed*
57. scarlet
58. vanity
59. trident**
60. noble*
61. industrious
62. studded
63. pronged
64. wand
65. naval
66. glimpse
67. molding
68. crested

Appendix B

Activity and Survey Sheets

Name _____ Rams - Control

Date _____

VOCABULARY

Directions: Take the five words below and do the following for each word.

1) List the definition--use a dictionary.

2) Give either a synonym (same) or an antonym (opposite).

3) Write a sentence using each word.

4) Class discussion.

(You have 30 minutes to complete this lesson.)

Vocabulary Words:

1. _____ 4. _____

2. _____ 5. _____

3. _____

*Do this on the back side of this sheet.

Rams
Control

Vocabulary Exercises

1. _____ _____
(word) (definition)

_____
(synonym) /or/ (antonym)

_____
(sentence)

---

2. _____ _____
(word) (definition)

_____
(synonym) /or/ (antonym)

_____
(sentence)

---

3. _____ _____
(word) (definition)

_____
(synonym) /or/ (antonym)

_____
(sentence)

---

4. _____ _____
(word) (definition)

_____
(synonym) /or/ (antonym)

_____
(sentence)

---

5. _____ _____
(word) (definition)

_____
(synonym) /or/ (antonym)

_____
(sentence)

_____ Jets - Treatment
Name

Date _____

VOCABULARY

Directions: Take each of the five words below and cut out a picture OR draw a picture to go with each word. Put the picture in your scrapbook and write the word next to the picture. Do NOT write the word's meaning. We will discuss your choices during class. You have 30 minutes.

Vocabulary Words:

1._____ 4._____

2._____ 5._____

3._____

I will ask you during class:

a) Why did you choose this picture or drawing?

b) How do the picture and word relate (go together) to each other?

c) What other meanings does this word have that you know of?

*Circle One Reading Teacher
English Teacher

To all English/Reading Teachers:

I'm taking an informal survey to help me on one of my courses. Would you please answer the following question and return this to me (or my mailbox) by 2:00 Wednesday? Thank you for your help!

"When you teach literature, how do you generally teach the vocabulary in that particular unit?"

_____ a. multiple choice lists

_____ b. synonym/antonym exercises

_____ c. board work/discussion

_____ d. dictionary (define and write in a sentence)

_____ e. word search puzzle

_____ f. crossword puzzle

_____ g. combination of above (list: _____

_____

_____ h. other (please explain) _____

_____

_____

(Continue on back if needed)

(Do not sign)

Appreciate your help - Carla Katz

Name _____ Jets
Treatment

ATTITUDE CHECKLIST

1. When you do vocabulary lessons would you rather (a) write the meanings and sentences for the words or (b) cut out or draw pictures to go with the words? _____ (Answer)

   Explain why you picked (a) or (b) _____

   _____

   _____

2. Did you feel that you learned the vocabulary words by cutting out or drawing pictures to go with the words? _____ (Answer)

   Explain your answer _____

   _____

   _____

3. What other ways help you to learn your vocabulary words?

   _____

   _____

Thank you!

Mrs. Katz

Appendix C

Pretest and Posttest Raw Score Data

Results (number missed) of two pretests and two posttests for visual-verbal group

Student	Multiple Choice		Word Passage	
	Pretest	Posttest	Pretest	Posttest
1	-20	-14	- 4	- 4
2	-49	-41	-14	- 8
3	-24	- 4	- 1	- 0
4	-25	-15	- 4	- 1
5	-35	-41	-12	-10
6	-47	-32	- 6	- 3
7	-34	-26	- 8	- 2
8	-49	-28	- 8	- 4
9	-36	-18	- 6	- 2
10	-39	-34	-10	- 9
11	-34	-13	- 9	- 5
12	-36	-17	- 7	- 4
13	-55	-41	-10	- 7
14	-37	-23	- 8	- 3
15	-33	-23	- 6	- 4
16	-43	-16	- 6	- 0
17	-36	-38	- 9	- 7
18	-49	-24	-10	- 4
19	-33	-12	- 5	- 1
20	-49	-41	-11	- 9
21	-53	-44	- 3	-11
22	-46	-27	- 7	- 5

Results (number missed) of two pretests and two posttests for traditional dictionary group

Student	Multiple Choice		Word Passage	
	Pretest	Posttest	Pretest	Posttest
1	-39	-12	- 6	- 2
2	-59	-40	-11	- 4
3	-48	-40	-10	- 8
4	-41	-35	- 6	- 4
5	-43	-22	- 6	- 4
6	-38	-31	- 9	- 2
7	-54	-34	-11	- 3
8	-41	-27	- 8	- 3
9	-48	-26	- 7	- 4
10	-40	-21	- 2	- 1
11	-50	-28	- 6	- 5
12	-40	-36	- 3	- 2
13	-37	-25	- 9	- 3
14	-20	- 6	- 2	- 1
15	-40	-30	- 8	- 4
16	-51	-21	- 5	- 2
17	-47	-31	- 4	- 3
18	-45	-34	-11	- 4
19	-46	-46	-10	- 9
20	-39	-15	- 7	- 1
21	-42	-45	- 8	- 8
22	-37	-19	- 6	- 2

Results (number missed) on 10 noun and 10 descriptor pretest and posttest scores for the visual-verbal group

Student	Ten Nouns		Ten Descriptors	
	Pretest	Posttest	Pretest	Posttest
1	- 2	- 2	- 6	- 3
2	-10	- 8	- 7	- 6
3	- 5	- 1	- 4	- 2
4	- 6	- 4	- 5	- 4
5	- 8	- 8	- 7	- 9
6	- 9	- 5	- 8	- 8
7	- 6	- 4	- 6	- 4
8	-10	- 4	- 8	- 8
9	- 8	- 1	- 8	- 7
10	- 9	- 6	- 6	- 9
11	- 8	- 2	- 7	- 4
12	- 8	- 5	- 8	- 3
13	-10	- 7	- 8	- 7
14	- 8	- 6	- 8	- 5
15	- 9	- 6	- 5	- 5
16	- 7	- 5	- 7	- 4
17	- 8	- 7	- 4	- 6
18	-10	- 5	- 9	- 4
19	- 6	- 1	- 9	- 3
20	- 7	- 6	-10	- 6
21	- 8	- 9	- 7	- 8
22	-10	- 4	- 7	- 9

Results (number missed) on 10 noun and 10 descriptor scores for the traditional dictionary group

Student	Ten Nouns		Ten Descriptors	
	Pretest	Posttest	Pretest	Posttest
1	- 7	- 2	- 7	- 3
2	-10	- 7	-10	- 8
3	-10	- 6	-10	- 9
4	-10	- 4	- 8	- 6
5	- 8	- 4	- 9	- 3
6	- 7	- 3	- 7	- 7
7	-10	- 7	-10	- 5
8	- 8	- 7	- 5	- 4
9	- 9	- 4	-10	- 7
10	-10	- 3	- 8	- 6
11	- 9	- 6	-10	- 5
12	- 8	- 7	- 8	- 8
13	- 7	- 6	- 8	- 8
14	- 2	- 0	- 7	- 3
15	- 8	- 6	- 8	- 7
16	-10	- 4	-10	- 5
17	- 8	- 6	- 8	- 4
18	-10	- 8	- 9	- 4
19	- 8	- 7	- 6	- 8
20	- 9	- 3	- 7	- 4
21	- 8	- 8	- 9	- 7
22	- 8	- 5	- 6	- 5